

Example 3: Find 'g' at an altitude of 100 km.

$$r = [6.38 \times 10^6] + [100\,000]$$

$$r = 6.48 \times 10^6 \text{ m}$$

$$F_g = \cancel{mg} = \frac{GM\cancel{m}}{r^2} \Rightarrow \text{cancel out 2nd mass}$$

$$\text{so } g = \frac{GM}{r^2} \quad \text{where } M \text{ is mass of Earth}$$

$$= \frac{(6.67 \times 10^{-11})(5.98 \times 10^{24})}{(6.48 \times 10^6)^2}$$

$$g = 9.5 \text{ N/kg}$$